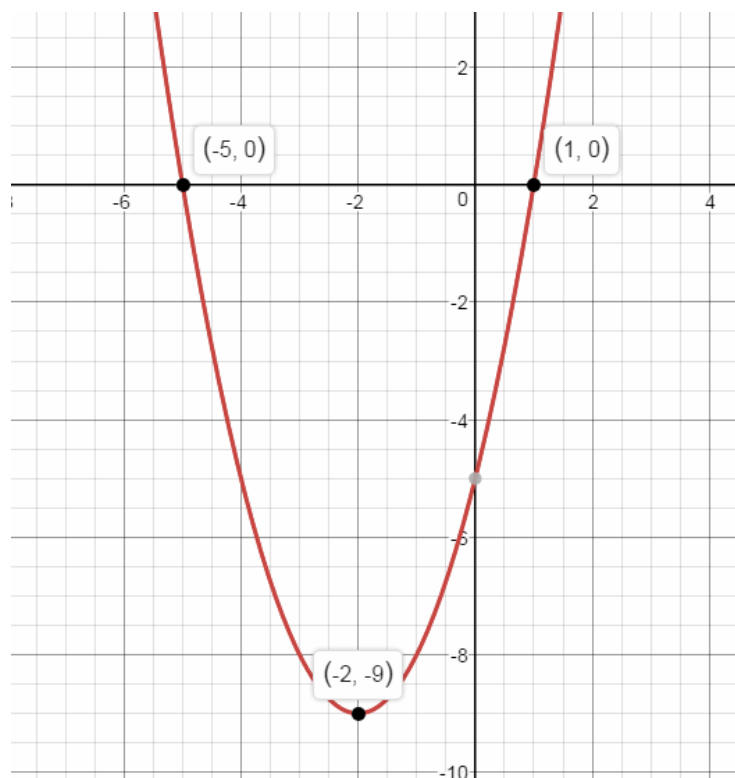


Unit 4 Test – Quadratics - PRACTICE

| Expectation | Level Achieved |
|---|----------------|
| A1 - determine the basic properties of quadratic relations; | |



1. From the graph on the left:

State:

Zeros: _____

Vertex: _____

Axis of Symmetry: _____

Max/Min Value: _____

Direction of Opening: _____

2. Determine if the following functions are linear, quadratic or exponential.

| <table><tr><th>X</th><th>Y</th></tr><tr><td>-2</td><td>3</td></tr><tr><td>-1</td><td>0</td></tr><tr><td>0</td><td>-1</td></tr><tr><td>1</td><td>0</td></tr><tr><td>2</td><td>3</td></tr><tr><td>3</td><td>8</td></tr><tr><td>4</td><td>15</td></tr></table> | X | Y | -2 | 3 | -1 | 0 | 0 | -1 | 1 | 0 | 2 | 3 | 3 | 8 | 4 | 15 | $y = x + 8 - 3x^2$ | $y = \frac{2^4}{2^x}$ |
|---|----|---|----|---|----|---|---|----|---|---|---|---|---|---|---|----|--------------------|-----------------------|
| X | Y | | | | | | | | | | | | | | | | | |
| -2 | 3 | | | | | | | | | | | | | | | | | |
| -1 | 0 | | | | | | | | | | | | | | | | | |
| 0 | -1 | | | | | | | | | | | | | | | | | |
| 1 | 0 | | | | | | | | | | | | | | | | | |
| 2 | 3 | | | | | | | | | | | | | | | | | |
| 3 | 8 | | | | | | | | | | | | | | | | | |
| 4 | 15 | | | | | | | | | | | | | | | | | |

3. For the quadratic defined by $y = -2x^2 + 8x + 24$ state:

- The equation of the relation in factored form
- The zeros
- the equation of the axis of symmetry
- the coordinates of the vertex
- equation of the relation in vertex form
- the y-intercept
- the y-value when $x = 1$
- 2 other points on the parabola

| Expectation | Level Achieved |
|--|----------------|
| A4 - solve problems involving quadratic relations. | |

4. At the end of June, Taylor throws his math binder upwards from the top of a cliff, even though he knows that he should keep his notes for next year. The model of its drop is approximated by the equation

$h = -5t^2 + 10t + 40$ where **h** is **height** in meters and **t** is **time** in seconds.

- How high is the cliff above the ground?
- When does the binder hit the ground?
- When is the binder 25 m above the ground?

5. Explain how to convert from vertex form to factored form. Be sure to use proper math terminology. You may use point form

6. The zeros of a parabola are 4 and -12 and the y-intercept is 96. Write the equation in factored form.

7. A baseball is thrown from the top of a building and falls to the ground below. Its path is approximated by the relation $h = -5t^2 - 30t + 35$, where h is the height of the ball above ground in metres, and t is the elapsed time in seconds.

- How tall is the building?
- When will the ball hit the ground?
- When does the ball reach its maximum height?

8. Solve the following:

- $0 = -4x^2 + 8x + 12$
- $0 = x^2 - 8x + 12$
- $0 = x^2 - 12x$
- $(x-1)^2 = (x+4)^2 - 8x$